

Applicant: Jacob et al.  
Application No.: 10/538,864

## REMARKS

Claims 1 – 5 and 7 – 14 are currently pending in this application, as amended. By the present amendment, claims 1, 5 and 10 have been amended and claim 6 has been cancelled. No new matter has been introduced into the claims by these amendments.

## PREVIOUSLY ALLOWABLE SUBJECT MATTER

In the previous Action, it was indicated that claims 5 and 10 include allowable subject matter and would be allowable if rewritten in independent form to include the limitations of the base claim and any intervening claims. Accordingly, in the previous Reply, claims 5 and 10 have been rewritten in independent form to include the limitations of claim 1. However, the current Action states that the allowance of claims 5 and 10 are withdrawn because of a newly cited reference. This newly cited reference, namely U.S. Patent No. 6,669,115 to Sun et al., was not applied against claim 10. Thus, it is believed that claim 10 should now be allowable.

## CLAIM REJECTIONS – 35 U.S.C. §103

Claims 1 - 4, 6 - 14 were rejected under 35 U.S.C. §103(a) as obvious in view of U.S. 4,478,368 to Yie. Applicants respectfully traverse this rejection.

The invention as currently claimed in independent claim 1 is a nozzle for spraying liquid substances, dispersions, emulsions, or suspensions for food and chemical industries, for use in fluidized-bed granulating systems. The nozzle includes a cylindrical nozzle body and a nozzle mouth piece. The nozzle body includes a centrally arranged inner tube and an outer tube spaced apart from the inner tube, the inner tube is connected to a liquid, dispersion, emulsion, or

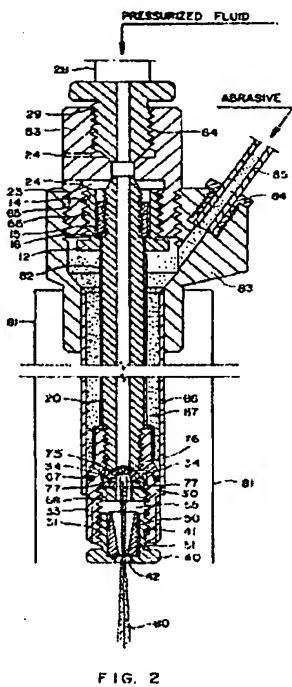
suspension supply. The outer tube is connected to an atomizing gas or to a carrier-gas supply and forms a lance base in a bottom region, and the inner tube is mounted in a receiving block, which is detachably attached in a tube arranged in a fixed manner on a lower region of the lance base with the inner tube. Any add-on parts attached to the inner tube are easily dis-assemblable from and re-assembleable with the tube for required cleaning of the nozzle. An attachment device, which connects the nozzle detachably to a processing housing of the fluidized-bed granulating system, is arranged at a lower region of the outer tube. The attachment device is a milk-tube union nut or a tri-clamp attachment.

The invention as claimed in independent claim 10 is a nozzle for spraying liquid substances, dispersions, emulsions, or suspensions, for use in fluidized-bed granulating systems. The nozzle includes a cylindrical nozzle body and a nozzle mouth piece. The nozzle body includes a centrally arranged inner tube and an outer tube spaced apart from the inner tube, the inner tube is connected to a liquid, dispersion, emulsion, or suspension supply. The outer tube is connected to an atomizing gas or to a carrier-gas supply and forms a lance base in a bottom region. The inner tube is mounted in a receiving block, which is detachably attached in a tube arranged in a fixed manner on a lower region of the lance base. The inner tube and any add-on parts attached to the inner tube can be removed from the tube, and an attachment device, which connects the nozzle detachably to a processing housing of the fluidized-bed granulating system, is arranged at a lower region of the outer tube. The inner tube can be screwed into the receiving block adjustable in a longitudinal axis direction for setting at least one of a spraying angle or a spraying pattern. The seal is provided for equalizing an adjustment path and includes a metal compensator or an elastic O-ring.

In contrast to the present invention, Yie is directed to a nozzle for introducing particulates into a liquid stream. The inner tube (20) defining the nozzle body is

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assembled by being threaded into a plurality of parts that are nested within one another as shown clearly in Figure 2, reproduced below.



Yie fails to show or suggest an inner tube is connected to a liquid, dispersion, emulsion, or suspension supply and an outer tube connected to an atomizing gas or to a carrier-gas supply forming a lance base in a bottom region.

Disassembly of this nozzle is only possible with certain difficulty, which is avoided by the present invention, and there is no requirement that Yie is easily disassemblable for cleaning the nozzle part. To the extent that the Yie assembly is not easily dis-assemblable from and re-assembleable with the tube for required cleaning distinguishes the present nozzle assembly from that of Yie. Additionally, with respect to claim 14, it has been made clear that the assembly further includes a clamp which detachably holds the receiving block to the tube so that the inner tube is axially moveable to and from an installed position when the clamp is released.

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Claim 10, which was previously indicated as allowable over Yie, is currently rejected over Yie. Applicants traverse the rejection of claim 10, and note that it was in fact previously indicated to be non-obvious by the Examiner in this case, and no specific reference has been made to Yie in the current action. Applicants submit that this claim remains non-obvious. If the Examiner chooses to maintain the rejection, without any specific finding, it will be addressed on appeal.

With respect to claims 12 and 13, the clamp attachment between the outer tube and the lance base as well as the clamp attachment between the receiving block and the tube are also lacking in Yie.

Yie deals with a cutting water jet containing an abrasive and not a nozzle for spraying liquid substances, dispersions, emulsions, or suspensions, for use in fluidized-bed granulating systems as claimed. It is clear that the invention of Yie is not at all concerned with providing a nozzle assembly that allows the nozzle to be easily disassembled using only a few hand movements such that the individual parts can then be cleaned prior to the nozzle being easily reassembled. Further, as the arrangement of Yie does not appear to require any disassembly or cleaning, it is believed that there would be no motivation or suggestion for using the arrangement of Yie for a nozzle assembly as in the present invention where there is a requirement for removing and cleaning the parts of the nozzle.

Previously allowable claim 5 was rejected in the Action under Section 103 as obvious over Yie in view of newly-discovered U.S. Patent No. 6,669,115 to Sun et al. Applicants respectfully traverse the rejection.

The invention as claimed in claim 5 is a nozzle for spraying liquid substances, dispersions, emulsions, or suspensions, for use in fluidized-bed granulating systems. The nozzle includes a cylindrical nozzle body and a nozzle mouth piece. The nozzle body includes a centrally arranged inner tube and an outer tube spaced apart from the inner tube, the inner tube is connected to a liquid, dispersion, emulsion, or

suspension supply. The outer tube is connected to an atomizing gas or to a carrier-gas stream supply and forms a lance base in a bottom region. The inner tube is mounted in a receiving block, which is detachably attached in a tube arranged in a fixed manner on a lower region of the lance base and the inner tube and any add-on parts attached to the inner tube can be removed from the tube, and an attachment device, which connects the nozzle detachably to a processing housing of the fluidized-bed granulating system, is arranged at a lower region of the outer tube, wherein in the region of the nozzle mouth piece, an add-on part comprising swirl bodies, swirl vanes, or a guide for guiding compressed air and for guiding the inner tube is arranged in an annular gap between the outer tube and the liquid insert or the inner tube and is rigidly connected to the liquid insert or to the outer tube.

Further to the above arguments regarding Yie, Sun et al. is directed to a dual fluid vortex mixing module. Specifically, the vortex mixing module of Sun et al. is directed to pre-mixing liquid and gas streams by injecting both into the same swirler slots prior to their entering the annular mixing chamber of the module (Sun et al. column 2, lines 59 – 62). The proposed combination fails to disclose each element of the invention since the presently claimed invention, as claimed in independent claim 5, recites swirl vanes, or a guide for guiding compressed air.

Sun et al. actually teaches away from the proposed combination with Yie. At column 1, lines 35 – 39, Sun et al. states that, in operation, atomizing nozzles "...generate numerous tiny bubbles of gas entrapped into the liquid, which causes the viscosity and surface tension of the liquid to be much reduced (bubble-laden fluid) and results in much finer sprays." Contrasted with Yie, column 4, lines 56 – 63, which states "One important feature of the process and apparatus of this invention is to provide the solid particles contained in a foam for mixture with a fluid jet stream. As the foam containing the solid particles contacts the fluid stream, the gaseous bubbles dispersed throughout the foam will collapse and the solid

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particles dispersed in the bubble film throughout the foam will be carried away by the fluid stream." One would not be motivated to combine the references since the atomizing nozzle of Sun et al. is directed to spraying bubble-laden fluid.

Accordingly, withdrawal of the Section 103 rejection of claims 1 – 5 and 7 – 14 is respectfully requested.

**CONCLUSION**

If the Examiner believes that any additional minor formal matters need to be addressed in order to place the present application in condition for allowance, the Examiner is invited to contact the undersigned by telephone at the Examiner's convenience.

In view of the foregoing amendments and remarks, applicants respectfully submit that the present application, including claims 1 – 5 and 7 – 14, is in condition for allowance, and a notice to that effect is respectfully requested.

Respectfully submitted,

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